

## AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

### Listing of Claims:

1. (Currently Amended) A method for determining the capabilities of a media system, the method comprising:

processing a multimedia stream in the media system at a first rate, the multimedia system comprising a plurality of functional objects including a media source, a transform, and a media sink, the first rate corresponding to a first mode in a set of modes including a reverse skip mode, a reverse key frame mode, a reverse full mode, a forward full mode, a forward key frame mode, or a forward skip mode;

while the multimedia stream is being processed at the first rate, receiving a request to process the multimedia stream at a second rate, the second rate corresponding to a second mode in the set of modes that is different than the first mode;

querying each of one or more functional objects in the media system to determine a functional limit of each of the one or more functional objects for a maximum playback rate of the multimedia stream in the second mode, wherein the one or more functional objects includes at least a decoder that decodes at least a portion of the multimedia stream; and

determining whether the multimedia system supports playback of the multimedia stream at the second rate by comparing the second rate to the maximum playback rate returned by each functional object such that if the second rate is below the maximum playback rate returned by each functional object, the multimedia system commences playback of the multimedia stream at the second rate, whereas if the second rate exceeds the maximum playback rate returned by each functional object, the multimedia system continues playback of the multimedia stream at the first rate.

and

determining which of the functional limits of the one or more objects maximally limits a capability the playback rate of the media system for each of the modes in the set of modes the predetermined function.

2-23. (Canceled)

24. (Currently Amended) A multimedia system comprising:  
a processor and at least one computer readable medium storing the following components:

a control layer configured to receive one or more media data streams from an application; and

a core layer coupled to the control layer, the control layer including a plurality of functional components including a media source, a stream source, a transform, a media sink, and a stream sink, the control layer also including a media engine component configured to perform the following:

process the one or more media data streams at a first rate corresponding to a first mode in a set of modes including a reverse skip mode, a reverse key frame mode, a reverse full mode, a forward full mode, a forward key frame mode, or a forward skip mode;

while the one or more media data streams are being processed at the first rate, receiving a request to process the one or more media data streams at a second rate, the second rate corresponding to a second mode in the set of modes that is different than the first mode;

querying each functional object to determine a functional limit of each functional object for a maximum playback rate of the one or more media data streams in the second mode; and

determining whether playback of the one or more media data streams is supported at the second rate by comparing the second rate to the maximum playback rate returned by each functional object such that if the second rate is below the maximum playback rate returned by each functional object, the media engine component commences playback of the one or more media data streams at the second rate, whereas if the second rate exceeds the maximum playback rate returned by each functional object, the media engine component continues playback of the one or more media data streams at the first rate.

~~query each of one or more core layer components in the multimedia system to determine a functional rate limit of each core layer component for a maximum playback rate of a multimedia stream, wherein the one or more functional objects includes at least a decoder that decodes at least a portion of the multimedia stream, the media engine configured to determine which of the functional limits of the core layer components maximally limits the playback rate of the multimedia system.~~

25. (Canceled)

26. (Original) The multimedia system of claim 24 wherein the control layer includes: the media engine; a topology loader configured to identify data flow; a media session configured to interface with core layer components; and a media processor configured to perform transforms on the media data streams.

27. (Currently Amended) The multimedia system of claim 24 wherein ~~the media engine interacts with a plurality of components in the core layer and the control layer to provide rate changes and rates, the media engine is~~ configured to use floating point values to linearly indicate a speed of playback.

28. (Original) The multimedia system of claim 27 wherein a negative rate specifies a backward playback.

29. (Currently Amended) The multimedia system of claim 24 wherein ~~the core layer further includes a media source, the media source is~~ configured to provide a presentation timestamp for media samples on the media stream, the samples configured to preserve the presentation timestamp independent of a rate for media playback.

30. (Currently Amended) The multimedia system of claim 24 wherein the multimedia system further includes a presentation clock configured to run time according to a current rate, and ~~the core layer further includes wherein the one or more media sinks is~~ coupled to

the presentation clock, ~~the media sinks and is~~ configured to display data according to the presentation clock and independent of non-presentation clock component timestamps.

31. (Previously Presented) The multimedia system of claim 24 wherein the media engine is configured to respond to requests for rate direction changes by playing out any remaining content up to a timestamp of a direction change, discarding any data in a pipeline, setting a rate of playback and restarting playback in an opposite direction in accordance with the direction change.

32. (Original) The multimedia system of claim 31 wherein data repeated after the restarting playback is discarded.

33. (Original) The multimedia system of claim 31 wherein the media engine is configured to be independent of tracking multiple playback rates unless the rates are within a same mode.

34. (Original) The multimedia system of claim 33 wherein one or more components in the core layer are configured to maintain a list of pending rate changes, each component having active only one rate at a time, each component configured to maintain a playback rate independent of tracking rate changes.

35. (Original) The multimedia system of claim 24 wherein the media engine is configured to support backward decoding for coder-decoders that do not support backward decoding, the media engine configured to perform forward decoding, and reverse any decoded samples.

36. (Original) The multimedia system of claim 35 wherein the reversed decoded samples are available for reuse.

37. (Canceled)

38. (Currently Amended) A computer-readable storage medium having computer-executable instructions for determining the capabilities of a multimedia system, the computer-executable instructions performing acts comprising:

processing a multimedia stream in the media system at a first rate, the multimedia system comprising a plurality of functional objects including a media source, a transform, and a media sink, the first rate corresponding to a first mode in a set of modes including a reverse skip mode, a reverse key frame mode, a reverse full mode, a forward full mode, a forward key frame mode, or a forward skip mode;

while the multimedia stream is being processed at the first rate, receiving a request to process the multimedia stream at a second rate, the second rate corresponding to a second mode in the set of modes that is different than the first mode;

querying each functional object in the media system to determine a functional limit of each functional object for a maximum playback rate of the multimedia stream in the second mode; and

determining whether the multimedia system supports playback of the multimedia stream at the second rate by comparing the second rate to the maximum playback rate returned by each functional object such that if the second rate is below the maximum playback rate returned by each functional object, the multimedia system commences playback of the multimedia stream at the second rate, whereas if the second rate exceeds the maximum playback rate returned by each functional object, the multimedia system continues playback of the multimedia stream at the first rate.

querying each of one or more functional objects in the media system to determine a functional limit of each of the one or more objects for a maximum playback rate of a multimedia stream in a set of modes, wherein the set of modes includes at least two of a reverse skip mode, a reverse key frame mode, a reverse full mode, a forward full mode, a forward key frame mode, or a forward skip mode, wherein the one or more functional objects includes at least a decoder that decodes at least a portion of the multimedia stream a predetermined function; and

determining which of the functional limits of the one or more objects maximally limits the capability playback rate of the media system for each of the modes in the set of modes the predetermined function.

39-65. (Canceled)